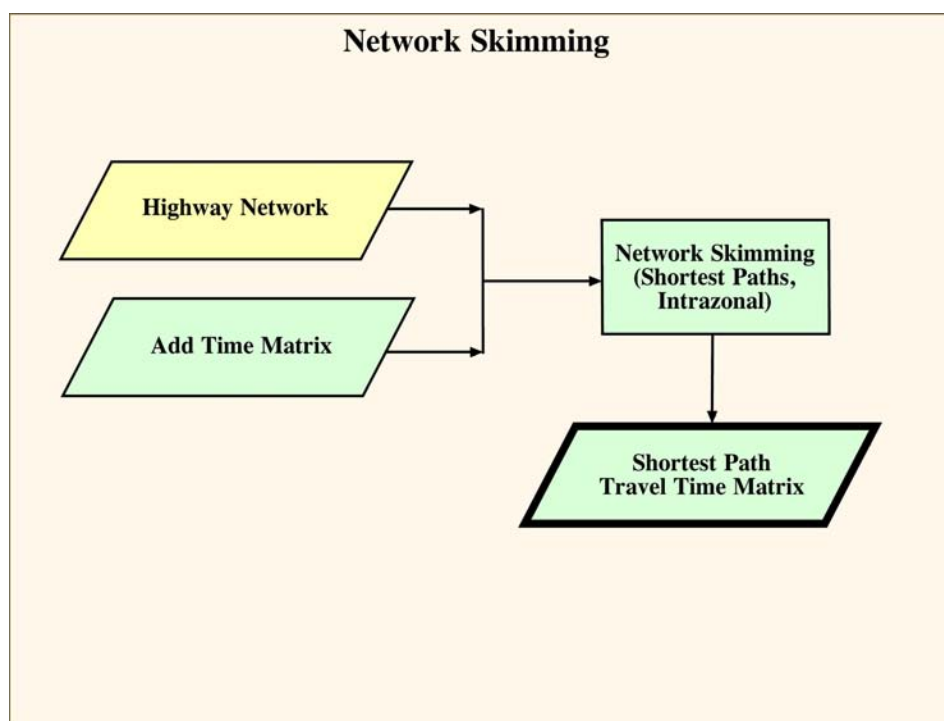




NETWORK SKIMMING

Network skimming is a process of identifying the route or travel path on the transportation network that has the lowest “cost” for the traveler. The “cost” can be the travel time, distance or some monetary value. In the Lincoln MPO Model the cost used is travel time. This minimum path value is stored in a matrix called the impedance matrix. This minimum path value results from the “skim tree” that is developed. The skim tree is a table that shows all the possible combinations of links or paths that could be used to go from one zone to another. Figure 10 below shows the network skimming process used for the Lincoln MPO model.

FIGURE 10. NETWORK SKIMMING



The roadway network (.NET) file created in the “Network Creation” process serves as one of the inputs in this process.

Add Time Matrix

Add time matrix is a special matrix created for the Lincoln MPO model. There may be some instances where two external zones are close to each other. In those cases, to prevent trip exchange between the zones, travel time between these zones is increased using the Add time matrix. This matrix can also be used to add time between internal zones, if needed.

For the Lincoln MPO model, a travel time of 60 minutes is added for travel between all external zones using the add time matrix.



Shortest Path Travel Time Matrix

The model uses the highway network and performs highway skims from centroid node to centroid node. The travel time is “minimized” and travel distance is skimmed. After the minimum travel time matrix is calculated, intrazonal travel times are calculated and added. The procedure used for calculating intrazonal travel times was the closest neighbors approach. After skimming, for each row origin, the travel time of its three closest neighbors is found from the matrix. The intrazonal time is then just the average of the three closest neighbors. Add time matrix is then added to create the final shortest path travel time matrix.

Also, if this is the first iteration of feedback model or if the model is run by itself, the network fields ABTRAVELTIME and BATRAVELTIME, which are the free flow travel times, are used. If it is a subsequent feedback iteration, the network fields AB_TIME_C_AVG and BA_TIME_C_AVG, which are the congested times calculated by traffic assignment, are used to create the shortest path travel time matrix.